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CROSS VALIDATION OF NT-PROBNP AS A PREDICTOR OF CARDIAC TRANSPLANT IN CHILDREN WITH DILATED CARDIOMYOPATHY

ACC Poster Contributions
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Background: Increasing serum levels of N-terminal prohormone brain natriuretic peptide (NTproBNP) are associated with worsening heart failure (HF) in adults. The role of NTproBNP in pediatric HF is not well established. In order to obtain unbias estimates of sensitivity and specificity, we performed a cross-validation of the predictive utility of NTproBNP as a biomarker for eventual cardiac transplant in children with dilated cardiomyopathy (DCM).

Methods: A previously reported group of 36 patients with DCM (median age at diagnosis = 2.2 years, 39% male) was used as a calibration set in which an optimized cut-point for NTproBNP (i.e., 1000 pg/ml) as a clinical indicator of severely decreased functional status was determined. This decision rule was then applied to 34 new patients with the same diagnosis of DCM (median age at diagnosis = 6.5 years, 50% male) in whom the clinical end-point was the presence or absence of eventual transplantation. NTproBNP was measured at each clinic visit or throughout hospitalization as needed. Patients whose NTproBNP dropped below the 1000 pg/ml cut-point prior to their last serial measurement were considered “Predicted Non Transplant”.

Results: Eleven of 13 transplanted patients were correctly predicted having NTproBNP constantly above 1000 pg/ml. Seventeen of the 21 Non-Transplant patients showed a drop in NTproBNP below the cut-point and were correctly predicted as Non-Transplant. Calculated sensitivity remained high (0.85-0.92) and specificity was fair (0.67-0.81) under various classification schemes used for borderline cases.

Conclusions: In children with HF, NTproBNP that remains above 1000 pg/ml over serial measurements are generally at increased risk for heart transplantation; although by itself such a value does not mandate such need. The results suggest that this value represents important additional information in the decision process. The low specificity is primarily a function of additional decision processes that intervene when a transplant becomes a possible option. The generalizability from functional status to the transplant situation was primarily due to the high correlation between the transplant and functional status outcomes (0.81).